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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/717,334 | 11/18/2003 | Heung-Nam Han | 71511/RSM | 8281 |

7590 03/13/2006

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| EXAMINER |
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EDMONDSON, LYNNE RENEE

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| ART UNIT | PAPER NUMBER |
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1725

DATE MAILED: 03/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/717,334

Applicant(s)

HAN ET AL.

Examiner

Lynne Edmondson

Art Unit

1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 4 and 5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4, 5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/23/05 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Abson et al. (GB 2270864 A).

Abson teaches a friction stir welding process comprising the steps of butting the dissimilar workpieces, positioning a cylindrical probe of harder material on the weld joint line and rotating and pressing the probe which by the nature of the process produces plastic deformation due to generation of frictional heat and joining the members by traversing the probe in a horizontal direction along the interface in the known method. The probe has diameter more than twice the thickness of the workpieces (figure 2A, page 1 lines 7-18, page 8 lines 6-14, page 11 line 35 – page 12 line 31).

3. Claims 1, 4 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Luc (USPN 4144110).

Luc teaches a friction stir welding process comprising the steps of butting the dissimilar workpieces, positioning a cylindrical probe of harder material on the weld joint line and rotating and pressing the probe which by the nature of the process produces plastic deformation due to generation of frictional heat and joining the members by traversing the probe in a horizontal direction along the interface (col 13 lines 51-64 and col 15 line 67 – col 16 line 14). The probe has diameter more than twice the thickness of the workpieces (figure 7, col 8 lines 52-56 and col 14 lines 11-26) and may have a profiled face (col 8 lines 35-41 and col 13 lines 31-35).

4. Claims 1 and 4 are rejected under 35 U.S.C. 102(e) as being anticipated by Tanaka et al. (JPN 2003-181655 A).

Tanaka teaches a friction stir welding process comprising the steps of butting the workpieces, positioning a cylindrical probe of harder material on the weld joint line and rotating and pressing the probe which by the nature of the process produces plastic deformation due to generation of frictional heat and joining the members by traversing the probe in a horizontal direction along the interface in the known method (abstract). The probe has a plurality of protrusions (figures 1 and 8-12).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. (JPN 2003-181655 A) in view of Aono et al. (USPN 6585148 B2).

Tanaka teaches a friction stir welding process comprising the steps of butting the workpieces, positioning a cylindrical probe of harder material on the weld joint line and rotating and pressing the probe which by the nature of the process produces plastic deformation due to generation of frictional heat and joining the members by traversing the probe in a horizontal direction along the interface in the known method (abstract). The probe has a plurality of protrusions (figures 1 and 8-12).

Aono teaches a friction stir welding process comprising the steps of butting the dissimilar workpieces, positioning a cylindrical probe of harder material on the weld joint line and rotating and pressing the probe which by the nature of the process produces plastic deformation due to generation of frictional heat and joining the members by traversing the probe in a horizontal direction along the interface (col 2 lines 25-52 and Table 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention that stir welding dissimilar materials is an obvious variation of welding similar materials and the process for such welding would be the same.

Response to Arguments

7. Applicant's arguments with respect to claim 5 have been considered but are moot in view of the new ground(s) of rejection.

8. Regarding applicant's argument that Tanaka does not teach a no-pin probe see tip 17 in figure 3, which does not have a pin and abstract.

9. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., intense plastic deformation *only* at the surfaces of the workpieces or just under the probe, depth of penetration, material of different thickness) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

10. The term "at surfaces" does not clearly limit the deformation to a particular depth. However it is noted that the phrases "only at the upper surfaces" or "just under the probe" clearly make this distinction.

11. Therefore the 102 rejection of claims 1 and 4 as anticipated by Tanaka stands.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Waldron et al. (USPN 6227433 B1, tool at least twice as thick as

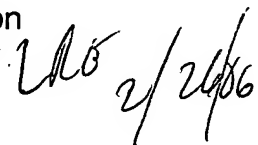
workpieces, lap weld), Miyangi et al. (US 20030111514 A1) and Ishida et al. (US 2003/0192941 A1 tool 6mm, work 4 mm).

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynne Edmondson whose telephone number is (571) 272-1172. The examiner can normally be reached on Monday through Thursday from 6:30 a.m. to 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lynne Edmondson
Primary Examiner
Art Unit 1725



LRE